SECTION 5

Quality of care in the Medicare program

Chart 5-1. In-hospital and 30-day postdischarge mortality rates improved from 2009 to 2012

Condition or procedure	Risk-adjusted rate per 100 eligible discharges, 2009	Risk-adjusted rate per 100 eligible discharges, 2012	Directional change in rate, 2009–2012
In-hospital mortality			
Acute myocardial infarction	7.97	6.23	Better
Congestive heart failure	3.93	3.05	Better
Stroke	10.82	8.69	Better
Hip fracture	3.22	2.73	Better
Pneumonia	4.19	3.20	Better
30-day postdischarge mortality			
Acute myocardial infarction	12.12	11.68	No difference
Congestive heart failure	10.26	9.34	Better
Stroke	23.79	22.54	Better
Hip fracture	8.25	8.38	No difference
Pneumonia	9.74	8.63	Better

Note: Rates are calculated based on the discharges eligible to be counted in each measure. Rates do not include deaths in non–inpatient prospective payment system hospitals or Medicare Advantage plans. "Better" indicates that the risk-adjusted rate decreased by a statistically significant amount from 2009 to 2012 using a $p \leq 0.01$ criterion. "No difference" indicates that the change in the rate was not statistically significant from 2009 to 2012 using a $p \leq 0.01$ criterion.

Source: MedPAC analysis of CMS Medicare Provider Analysis and Review data using Agency for Healthcare Research and Quality Inpatient Quality Indicators version 4.1b (with modifications for 30-day mortality rate calculations).

- Our most recent analysis of several inpatient quality indicators shows generally positive trends. We analyzed five of the Inpatient Quality Indicators developed by the Agency for Healthcare Research and Quality to measure in-hospital and 30-day postdischarge mortality rates. Trends in risk-adjusted in-hospital mortality rates are used to assess changes in the quality of care provided to Medicare beneficiaries during inpatient stays for certain medical conditions. Thirty-day postdischarge mortality rates reflect the quality of care during a patient's transition from an inpatient stay to post-acute care or home and in the critical 30-day period following their discharge from the hospital.

- Rates of deaths during a hospital stay declined from 2009 to 2012 for all five of the conditions we analyzed: acute myocardial infarction (AMI), congestive heart failure, stroke, hip fracture, and pneumonia.

- Rates of deaths within 30 days after a beneficiary's discharge from a hospital stay improved from 2009 to 2012 for congestive heart failure, stroke, and pneumonia, but remained stable for patients discharged with a diagnosis of AMI or hip fracture.

Chart 5-2. Most hospital inpatient patient safety indicators improved or were stable from 2009 to 2012

Patient safety indicator	Risk-adjusted rate per 100 eligible discharges, 2009	Risk-adjusted rate per 100 eligible discharges, 2012	Directional change in rate, 2009–2012
Death among surgical inpatients with treatable serious complications	9.79	11.77	Worse
Iatrogenic pneumothorax	0.05	0.03	Better
Postoperative respiratory failure	1.73	0.88	Better
Postoperative PE or DVT	0.49	0.39	Better
Postoperative wound dehiscence	0.28	0.18	Better
Accidental puncture or laceration	0.19	0.14	Better

Note: PE (pulmonary embolism), DVT (deep vein thrombosis). "Better" indicates that the risk-adjusted rate decreased by a statistically significant amount from 2009 to 2012 using a $p \leq 0.01$ criterion.

Source: MedPAC analysis of CMS Medicare Provider Analysis and Review data using Agency for Healthcare Research and Quality Patient Safety Indicators, version 4.1b.

- We analyzed six of the Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicators (PSIs), which measure the frequency of potentially preventable adverse events that can occur during an inpatient stay, such as the development of postoperative PE or DVT (a blood clot that can suddenly obstruct an artery or vein), or a patient's death from serious but treatable complications following surgery. The rates are calculated using software from AHRQ and Medicare inpatient hospital discharge data.

- Rates improved from 2009 to 2012 for five of the six PSIs we analyzed:
  - iatrogenic pneumothorax (introduction of air into the pleural cavity during a medical procedure, which often causes the lung to collapse)
  - postoperative respiratory failure
  - postoperative PE or DVT
  - postoperative wound dehiscence (parting of the sutures of a surgical wound)
  - accidental puncture or laceration during treatment

  The indicator that worsened from 2009 to 2012 was the rate of deaths among surgical inpatients with treatable serious complications.

- Caution should be used in interpreting all the reported PSI rates. PSIs measure rates of very rare events, and it is difficult, even when measuring across all inpatient prospective payment system hospitals, to detect statistically significant changes. The reliability of some of the PSIs also can be affected by variations in providers' coding practices. The Commission monitors trends in the selected PSIs as indicators—not definitive evidence—of changes in rates of treatment-related harm to patients that can be avoided with adherence to known clinical safety practices.

Chart 5-3. SNFs improved on risk-adjusted rates of community discharge and potentially avoidable rehospitalizations, but there was little change in patient functional status

Measure	2011	2012
Discharged to the community	28.8%	30.6%
Potentially avoidable rehospitalizations during SNF stay	12.5	11.7
Potentially avoidable rehospitalizations during 30 days after discharge from SNF	5.9	5.8
Combined during and after SNF stay rehospitalization rate	15.6	14.9
Rate of improvement in one or more mobility ADLs	27.1	27.4
Rate of no decline in mobility	88.7	88.9

Note: SNF (skilled nursing facility), ADL (activity of daily living). High rates of discharge to community indicate better quality. High rehospitalization rates indicate worse quality. The rate of mobility improvement is the average of the rates of improvement in bed mobility, transfer, and ambulation, weighted by the number of stays included in each measure. Stays with improvement in one, two, or three ADLS are counted in the improvement measures. The rate of no decline in mobility is the share of stays with no decline in any of the three ADLs. Rates are the average of facility rates and calculated for all facilities with 25 or more stays. Measures exclude hospital-based swing-bed units.

Source: Kramer, A., M. Lin, R. Fish, et al. 2014. *Development of potentially avoidable readmission and functional outcome SNF quality measures.* Report prepared by staff from Providigm, LLC for the Medicare Payment Advisory Commission. Washington, DC: MedPAC.

- Rates of risk-adjusted community discharge and potentially avoidable rehospitalization among SNF patients improved between 2011 and 2012. The decline in potentially avoidable rehospitalizations was the result of improvements in readmissions during the SNF stay; rates for the 30 days after discharge from the SNF were essentially unchanged.

- The rehospitalization rates count only stays readmitted to a hospital with the principal diagnosis of a potentially avoidable condition. The 13 potentially avoidable conditions include congestive heart failure, electrolyte imbalance/dehydration, respiratory infection, sepsis, urinary tract or kidney infection, hypoglycemia or diabetic complications, anticoagulant complications, fractures and musculoskeletal injuries, acute delirium, adverse drug reactions, cellulitis/wound infections, pressure ulcers, and blood pressure management.

- The two risk-adjusted measures of changes in functional status were essentially unchanged between 2011 and 2012. The mobility measures are composites of the patients' abilities regarding bed mobility, transfer, and ambulation, and they consider the likelihood that a patient will change, given her functional ability at admission. A facility admitting patients with worse prognoses will have a lower expected rate of achieving these outcomes, and this difference will be reflected in the risk-adjusted rates. The rate of improvement in mobility shows the share of stays with improvement in one, two, or three ADLs: bed mobility, transfer, and ambulation. The rate of no decline in mobility is the share of stays with no decline in any of the three ADLs.

- There was considerable variation in most of the measures. For example, the worst performing quarter of SNFs had readmission rates at or above 14.7 percent, whereas the best performing quarter had rates at or below 8.4 percent.

Chart 5-4. Risk-adjusted home health quality measures held steady or improved slightly from 2008 to 2013

Functional measure	2008	2011	2012	2013
Improvements in:				
Transferring	51%	51%	52%	52%
Bathing	62	62	63	63
Walking	N/A	53	55	57
Medication management	N/A	43	45	46
Pain management	N/A	65	65	65

Note: N/A (not applicable). The measures for walking, medication management, and pain management changed in 2011, and therefore the 2008 results shown are not comparable with data from later years.

Source: MedPAC analysis of Outcome and Assessment Information Set, home health standard analytic file, and CMS Home Health Compare data.

- Medicare publishes risk-adjusted home health quality measures that track changes in the functional abilities for patients who receive home health care. These measures do not include home health episodes that end with a hospitalization.
- Since 2008, the rates of functional improvement have generally held steady or slightly improved each year.

Chart 5-5. Dialysis quality of care: Some measures show progress, others need improvement, 2007–2011

Outcome measure	2007	2009	2011
Percent of in-center hemodialysis patients:			
Receiving adequate dialysis (higher is better)	94%	95%	97%
Anemia measures			
Mean hemoglobin 10 to < 12 g/dL	49	62	74
Mean hemoglobin ≥ 12 g/dL*	45	32	12
Mean hemoglobin < 10 g/dL	6	6	14
Dialyzed with an AV fistula	47	53	59
Percent of peritoneal dialysis patients:			
Receiving adequate dialysis (higher is better)	89	89	91
Anemia measures			
Mean hemoglobin 10 to < 12 g/dL	48	57	61
Mean hemoglobin ≥ 12 g/dL*	45	33	21
Mean hemoglobin < 10 g/dL	7	10	18
Percent of all dialysis patients wait-listed for a kidney	17	17	17
Renal transplant rate per 100 dialysis patient years	4.4	4.1	3.8
Annual mortality rate per 100 patient years*	20.8	19.5	18.4
Total admissions per patient year*	1.9	1.9	1.8
Hospital days per patient year	12.9	12.1	11.7

Note: g/dL (grams per deciliter [of blood]), AV (arteriovenous). Data on dialysis adequacy, use of fistulas, and anemia management represent share of patients meeting CMS's clinical performance measures. United States Renal Data System adjusts data by age, gender, race, and primary diagnosis of end-stage renal disease.
*Lower values suggest higher quality.

Source: Compiled by MedPAC from the Elab Project Report, Fistula First, and the United States Renal Data System.

- Quality of dialysis care is mixed. Performance has improved on some measures, but performance on others remains unchanged.
- All hemodialysis patients require vascular access—the site on the patient's body where blood is removed and returned during dialysis. Between 2007 and 2011, use of arteriovenous fistulas, considered the best type of vascular access, increased from 47 percent to 59 percent of hemodialysis patients. Between 2007 and 2011, overall adjusted mortality rates decreased but remained high among dialysis patients.
- Between 2007 and 2011, the proportion of hemodialysis patients receiving adequate dialysis remained high. Overall rates of hospitalization remained steady at about two admissions per dialysis patient per year.
- Other measures suggest that improvements in dialysis quality are still needed. We looked at access to kidney transplantation because it is widely believed to be the best treatment option for individuals with end-stage renal disease. Between 2007 and 2011, the proportion of dialysis patients accepted on the kidney transplant waiting list remains low, and the renal transplant rate per 100 dialysis patient years has declined.

Chart 5-6. Medicare Advantage quality measures show improvement between 2011 and 2013

Measures	HMO averages (cost plans and PSOs included) 2011	2012	2013	Local PPO averages 2011	2012	2013
HEDIS® administrative measures						
Breast cancer screening	68.5	68.9	70.5[a]	66.1	65.9[b]	67.7[b]
Glaucoma testing	63.8	65.8[a]	68.6[a]	65.5	66.8	69.4[a]
Osteoporosis management	20.7	22.5	24.8	18.7	19.3[b]	19.4[b]
Rheumatoid arthritis management	72.8	72.6	75.4[a]	78.3	77.7[b]	79.3[b]
HEDIS® hybrid measures						
BMI documented	50.3	68.1[a]	81.7[a]	36.7	63.2[ab]	77.1[ab]
Colorectal cancer screening	57.6	60.0[a]	63.1[a]	41.3	55.5[ab]	59.1[ab]
Cholesterol screening for patients with heart disease	88.5	88.9	89.5	87.1	88.4[a]	87.7[b]
Controlling blood pressure	61.9	64.0[a]	63.9	55.8	61.3[ab]	60.0[b]
Cholesterol screening for patients with diabetes	87.9	88.3	88.7	86.3	86.7[b]	86.7[b]
Eye exam to check for damage from diabetes	64.6	66.0	67.6	62.7	64.3	65.5
Kidney function testing for members with diabetes	89.2	89.8[a]	90.5[a]	87.3	88.1[a b]	88.5[b]
Diabetics with cholesterol is under control	52.2	52.5	52.8	45.9	51.1[a]	49.6[b]
Diabetics not controlling blood sugar (lower rate better)	25.9	26.5	25.4	34.3	28.4[a]	28.6[b]
Measures from HOS[c]						
Advising physical activity	47.9	48.6	50.0[a]	47.6	47.7	49.1[a]
Improving bladder control	36.0	34.9[a]	34.6	36.6	35.8	35.9[b]
Reducing the risk of falling	60.5	60.5	61.8[a]	55.1	54.3[b]	56.6[ab]
Other measures based on HOS						
Improving or maintaining physical health	66.4	65.5[a]	66.5[a]	66.1	65.6	67.1[a]
Improving or maintaining mental health	77.5	76.5[a]	77.5[a]	78.5	77.8	78.0
Measures from CAHPS®						
Annual flu vaccine	67.9	68.0	70.7[a]	68.6	68.8	72.0[a]
Ease of getting needed care and seeing specialists	84.7	84.4	84.9	85.9	85.9	86.1[b]
Getting appointments and care quickly	75.1	75.5	75.7	76.7	76.5	76.2
Overall rating of health care quality	85.5	85.8	85.9	86.1	86.5[a]	86.3
Overall rating of plan	85.7	86.2	86.2	84.2	85.1[a]	85.0[b]

Note: HMO (health maintenance organization), PPO (preferred provider organization), PSO (provider sponsored organization), HEDIS® (Healthcare Effectiveness Data and Information Set, a registered trademark of the National Committee for Quality Assurance), BMI (body mass index), HOS (Health Outcomes Survey), CAHPS® (Consumer Assessment of Healthcare Providers and Systems, a registered trademark of the Agency for Healthcare Research and Quality). Medicare Advantage plan types not included in the data are regional PPOs, private fee-for-service plans, continuing care retirement community plans, and employer direct-contract plans. Cost-reimbursed HMO plans are included. HEDIS administrative measures are calculated using administrative data; hybrid measures involve sampling medical records to determine a rate. Averages are for all reporting plans in each year; results may therefore differ from those shown in other MedPAC reporting of scores for plans that report measures for both years of a two-year time period.

[a] Statistically significant difference in performance from previous year ($p < 0.05$).

[b] Statistically significant difference in performance in 2013 between HMO and PPO results ($p < 0.05$).

[c] Results shown for HEDIS measures taken from HOS (the three measures listed) include scores for plans not reporting other HEDIS data. Results may therefore differ from those shown in other MedPAC reporting of these scores.

Source: MedPAC analysis of CMS HEDIS public use files for HEDIS measures and star ratings data for measures based on HOS and for CAHPS measures.

(Chart continued next page)

Chart 5-6. Medicare Advantage quality measures show improvement between 2011 and 2013 (continued)

- The chart displays the simple averages across all plans in each category (HMOs and local PPOs) for each year.

- The measures listed are included in the measures that CMS uses to develop plan star ratings, which are the basis of quality bonus payments for plans (see Chart 9-12). For star rating purposes, measures have different weights. Process measures, such as each of the HEDIS administrative measures in the table, have a weight of 1. Patient experience measures, including the last four items in the table, have a weight of 1.5. Outcome measures have a weight of 3. The table includes the following outcome measures used in the star ratings: controlling blood pressure (for all patients with hypertension), diabetics with their cholesterol under control, and diabetics not controlling their blood glucose (sugar).

- Between 2012 and 2013, HMOs had statistically significant improvement for 11 of the 23 measures shown in the chart. Of the 11 improved measures, 4 are screening or testing measures. HMOs also improved on two of three measures collected through HOS and on the two measures based on beneficiaries' reporting of improved mental or physical health.

  Seven measures showed statistically significant improvement among local PPOs, including two testing or screening measures. PPOs also improved in the same two HOS measures as HMOs, as well as the measure of beneficiaries' reporting improved physical health. PPOs and HMOs both showed improved rates of influenza vaccination.

- The performance of HMOs and PPOs differs across quality measures. For eight of the nine HEDIS hybrid measures—which are measures that involve documentation from a review of a sample of medical records—HMOs continued to perform better than local PPOs, though among PPOs, two such measures improved (recording of body mass index and colorectal cancer screening rates). HMOs also performed better than local PPOs on four other measures, including three HEDIS measures: breast cancer screening, osteoporosis management in women who have had a fracture, and reducing the risk of falling among members with a problem falling, walking, or maintaining balance. Local PPOs performed better on a measure of rheumatoid arthritis management and a measure of improving bladder control. In patient experience measures, PPOs performed better than HMOs in members' perception of their ease of getting care, but HMO plans had higher overall plan ratings.